DIRECT TESTIMONY OF JIM GREVATT

ON BEHALF OF THE SOUTH CAROLINA COASTAL CONSERVATION LEAGUE, SOUTHERN ALLIANCE FOR CLEAN ENERGY, AND SIERRA CLUB

DOCKET NO. 2023-9-E

I. INTRODUCTION AND QUALIFICATIONS

Q: Please state your name, position, and business address.

A: My name is Jim Grevatt. I am a Managing Consultant at Energy Futures Group, located at 10298 Route 116, Hinesburg, VT 05461.

Q: Please describe Energy Futures Group.

A: Energy Futures Group (EFG) is a clean-energy consulting firm headquartered in Hinesburg, Vermont, with offices in Boston and New York. EFG designs, implements, and evaluates programs and policies to promote investments in efficiency, renewable energy, other distributed resources, and strategic electrification. EFG staff have delivered projects on behalf of energy regulators, government agencies, utilities, and advocacy organizations in 40 states, 8 Canadian provinces, and several countries in Europe.

EFG brings to its work a unique combination of technical, economic, program, and policy expertise. EFG staff have critically evaluated hundreds of energy efficiency and renewable energy programs, playing key roles in developing many that have subsequently won awards for excellence. Recent work involves efficiency program portfolios and policies in each of the fifteen highest-ranking states on the American Council for an Energy Efficient Economy (ACEEE) State

Energy Efficiency Scorecard, as well as in Ontario, Manitoba, and British Columbia. EFG staff have provided expert witness testimony on efficiency programs, integrated resource planning, and related policy issues in regulatory proceedings in twenty states and five Canadian provinces.

Q: Please summarize your professional and educational qualifications.

A: I have worked in the energy efficiency industry since 1991 in a wide variety of roles. Prior to joining EFG, I served as the Director of Residential Energy Services at Efficiency Vermont and the District of Columbia Sustainable Energy Utility. I also served as the Manager of Energy Services at Vermont Gas Systems, managing both residential and commercial utility energy efficiency programs. I have extensive hands-on experience conducting hundreds of energy audits for Vermont's Low-Income Weatherization Assistance Program and Vermont Gas Systems' demand side management programs. In my current role as Managing Consultant at EFG, I have advised regulators, utilities, and other energy efficiency program administrators, environmental organizations, and low income and affordable housing advocates in over twenty states and Canadian provinces, and I have provided expert witness testimony in fourteen of those jurisdictions.

I received a B.F.A. from the University of Illinois. My resume, included as **Exhibit JG-1**, provides additional detail regarding my professional and educational experience.

Q: Have you previously filed testimony in South Carolina?

A: Yes, I recently provided expert witness testimony in Duke Energy Progress's 2022 rate proceeding, Docket No. 2022-254-E. I also provided testimony in Docket No.

2021-361-G on Dominion Energy South Carolina's (DESC or the Company) proposed efficiency programs for its gas customers and in Docket Nos. 2019-224-E and 2019-225-E related to the energy efficiency (EE) and demand side management (DSM) assumptions underlying the Duke Energy Carolinas and Duke Energy Progress 2020 Integrated Resource Plan (IRP).

Q: On whose behalf are you testifying in this proceeding?

A: I am testifying on behalf of the South Carolina Coastal Conservation League, Southern Alliance for Clean Energy, and Sierra Club (collectively, Nonprofit Intervenors).

Q: Are you sponsoring any exhibits?

A: Yes, I am sponsoring two exhibits. **Exhibit JG-1** is my curriculum vitae. **Exhibit JG-2** is a report EFG prepared for clients in Virginia, titled *Pathways for Energy Efficiency in Virginia* (VA Pathways).

Q: What is the purpose of your direct testimony in this proceeding?

A: The purpose of my testimony is to provide observations to the Public Service Commission of South Carolina (Commission) on the amount of DSM that DESC includes in its IRP. I will review the importance of EE and demand response (DR) in utility resource planning, discuss whether the Company's proposals are sufficient to ensure the best interests of its customers are served, and contrast the Company's treatment of DSM with industry best-practices. To this end, I prepared a DSM savings scenario that saves considerably more energy than DESC's "High DSM" scenario and provided it to Nonprofit Intervenors' Witness Derek Stenclik of Telos Energy, Inc. Mr. Stenclik incorporated my DSM savings estimates in PLEXOS modeling of alternate scenarios and determined that enhanced reliability could be achieved in his preferred portfolio while keeping costs lower than the Company's preferred plan.

Q: Please identify the documents and filings on which you base your opinions regarding DESC's 2020 IRP.

A: I reviewed the Company's IRP and the 2023 Market Potential Study on which the IRP's EE/DSM assumptions are based, as well DESC's responses to CCL/SACE discovery responses and other intervening parties. In addition, my testimony is informed by my ongoing, active participation in DESC's Energy Efficiency Advisory Group (EE Advisory Group) since the conclusion of DESC's 2020 IRP proceeding, Docket No. 2019-226-E.[1]

II. SUMMARY OF OBSERVATIONS AND RECOMMENDATIONS

Q: What are your primary observations from your review of DESC's IRP?

A: My primary observations are as follows:

1. DESC created low, medium, and high DSM forecasts but included the "Medium DSM forecast" in all of its Core Build Plans[2] and analyzed only a single scenario that included the High DSM forecast—even though the Company's analysis showed that the High DSM Build Plan is lower in cost;[3]

[1] Though I did not provide testimony in the DESC 2020 IRP proceeding, two of my colleagues, Anna Sommer and David Hill, did testify on behalf of CCL and SACE. The Commission's final order adopted a number of Witness Hill's recommendations relating to the EE/DSM assumptions in DESC's IRP. Order No. 2020-832 at 75-76.
[2] DESC 2023 IRP at 89.
[3] *Id.*

2. The Medium DSM Forecast reflects the level of energy efficiency identified as the "Achievable Potential" in ICF's Dominion Energy South Carolina DSM Potential Study (MPS) that is principally "based on current DESC performance and spending in the latest evaluated program year"[4];
3. Pursuing only the Medium DSM forecast would maintain the status quo in which DESC's EE implementation is among the poorest performing large investor-owned utilities in the nation;
4. DESC's MPS is extraordinarily conservative in its assumptions about the Company's capabilities. Its "Commission-Required Scenarios" were developed with no attempt to iterate cost-effective portfolio solutions and without providing opportunity for EE Advisory Group participants to provide input to the process.
5. DESC "modeled two DR programs, Residential ToU[5] and Smart Thermostat Opt-In, in the 2023 IRP,"[6] which is a positive step that could help mitigate winter peak related to future load growth.

Q: What actions do you recommend the Commission take in response to the Company's IRP?

A: I recommend the Commission:

1. Require DESC to develop and submit to the Commission a five-year EE portfolio plan that reflects the higher levels of savings I describe in my

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[4] DESC 2023 DSM Potential Study at 5.
[5] "ToU" stands for "Time of Use," which is a rate structure that reflects different pricing correlated to the relative cost of providing electricity at different times of day.
[6] DESC 2023 IRP at 17.

testimony. Specifically, DESC should provide a plan that achieves the annual incremental EE savings shown in **Table 1**:

Table 1: EFG Proposed Annual EE Savings Targets

	Portfolio Total Savings	***% of 2021 Sales***	***% of 2021 Sales (Excl Opt-Out)***
2023	***66,289***	***0.31%***	***0.39%***
2024	***95,051***	***0.44%***	***0.57%***
2025	***133,384***	***0.62%***	***0.79%***
2026	***170,498***	***0.79%***	***1.01%***
2027	***208,882***	***0.97%***	***1.24%***

2. Require DESC to include in its five-year EE plan the rollout of residential DR programs at no less than the level included in the 2023 IRP.
3. Require the Company to develop and implement an action plan to support all of its customers by participating in the opportunities created by the IRA, such as by helping customers to understand which measures qualify for IRA rebates and tax credits and how they can find a contractor and comply with application criteria.
4. Require DESC to incorporate additional EE into its modeling consistent with my recommendations and as discussed further in the testimony of Nonprofit Intervenors Witness Derek Stenclik.

III. <u>BACKGROUND</u>

Q: Why is it important for the Commission to consider EE/DSM in this proceeding?

A: EE programs simultaneously provide both macro and micro benefits to customers: they cost-effectively reduce infrastructure and operations investments the

Companies would otherwise need, while also providing a valuable tool for individuals to manage their electricity costs. These benefits can be divided into two categories: 1) utility system benefits, consisting of reduced operating and capital costs, which can lead to deferral of associated rate impacts; and 2) customer benefits, consisting of reduced monthly bills that result from the reduction of wasted energy and/or more timely use of electricity.

The direct customer benefits provided by EE programs are critically important for those customers who have a high "energy burden," by which I mean customers who must devote an unusually high portion of their income simply to pay their energy bills.

Q: You say these are the "primary" benefits of EE programs. Are there other benefits?

A: Yes. There are numerous additional benefits that enhance the overall value of EE programs, but which may or may not be recognized in cost-effectiveness testing. These can include improved health and safety in homes, such as fewer attacks for people suffering with asthma when moisture issues that lead to mildew and mold growth are addressed as part of building retrofits. There are also benefits to local economies from building trades jobs associated with the building retrofits and the sale and installation of new equipment. Indeed, in a 2018 report, the United States Environmental Protection Agency found that energy efficiency can provide benefits that include "savings in energy and fuel costs for consumers, businesses, and the government; new jobs in, profits for, and tax revenue from companies that support or use energy efficiency and renewable energy, such as construction, manufacturing, and services; and higher productivity from employees and students taking fewer sick days." [7]

Q: What is the purpose of EE/DSM in the context of utility resource planning?

A: Utilities in every jurisdiction in which I have worked are required by regulators to provide safe, reliable energy at the lowest cost possible. EE/DSM is a critically important tool for achieving these three fundamental requirements. Energy efficiency reduces the amount of energy utilities need to provide to their customers, and when a utility can invest in energy efficiency at a lower cost than it would take to meet customers' energy requirements through new generation, transmission, and distribution investments and the fuel required to operate those generators, it is considered to be cost-effective. Thus, prudent resource planning must account for and evaluate cost-effective energy efficiency, which provides cost savings to customers in the long term by deferring or eliminating the need for more costly infrastructure investments.

Q: Does energy efficiency provide any safety or reliability benefits?

A: Yes. In addition to the health benefits that come with improved building shell efficiency and modern, high efficiency equipment, energy efficiency is a reliable resource that is not subject to outages and variable fuel costs. What is more, efficient buildings are able to maintain safe indoor temperatures for a longer period

[7] U.S. Envtl. Prot. Agency, *Quantifying the Multiple Benefits of Energy Efficiency and Renewable Energy* (July 2018) at I-7, https://www.epa.gov/sites/production/files/2018-07/documents/epa_slb_multiple_benefits_508.pdf.

of time when extreme weather events cause power system disruptions.[8] Benefits such as these, in addition to the bill saving benefits energy efficiency provides are just one more reason why DESC should dramatically increase its commitment to higher levels of energy efficiency.

Q: How does energy efficiency factor in to DESC's resource planning?

A: In its IRP, DESC appears to make an effort to comply with Act 62, which requires the Company to

> fairly evaluat[e] the range of demand side, supply side, storage, and other technologies and services available to meet the utility's service obligations. Such portfolios and evaluations must include an evaluation of low, medium, and high cases for the adoption of renewable energy and cogeneration, energy efficiency, and demand response measures.[9]

To develop a range of DSM assumptions, DESC retained ICF, a third-party consultant, to conduct its 2023 DSM Potential Study;[10] ICF also conducted the Company's 2019 DSM Potential Study, which informed the 2020 IRP.[11] However there is little evidence that DESC and ICF recognize the load mitigating benefits of energy efficiency and the potential for its deployment to provide cost-effective benefits for its customers. As a result, it is my view that DESC has failed to "fairly" evaluate a high DSM case in its 2023 IRP. My testimony provides evidence for this point of view.

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[8] *See, e.g.*, Urban Green Council, *Baby It's Cold Outside* (Feb. 2014), https://www.urbangreencouncil.org/wp-content/uploads/2022/11/2014.02.05-Baby-Its-Cold-Inside.pdf and Sneha Ayyagari et al., Rocky Mountain Inst., *Hours of Safety in Cold Weather: A Framework for Considering Resilience in Building Envelope Design and Construction* (Feb. 2020), https://rmi.org/wp-content/uploads/2020/02/Hours-of-Safety-insight-brief.pdf.
[9] S.C. Code Ann. § 58-37-40(B)(1)(e).
[10] DESC 2023 IRP at 14.
[11] Direct Testimony of Therese Griffin at 6, Docket No. 2019-226-E (June 4, 2020).

Act 62 further directs the Commission to "in its discretion…consider…customer affordability and least cost" [12] in assessing whether the Company's IRP is the most reasonable and prudent plan. In my view, this key feature of Commission review also requires DESC to revisit its conclusions on DSM potential, as set out in more detail below.

Q: Has the Commission provided additional direction to DESC regarding its assessment of DSM in the 2023 IRP?

A: Yes. In its final order rejecting DESC's Original 2020 IRP, the Commission directed that "DESC include in its 2023 IRP a comprehensive evaluation of the cost-effectiveness and achievability of DSM portfolios reaching 1% and higher savings, including savings levels of 1.25%, 1.5%, 1.75% and 2%, and to work with the [EE] Advisory Group to develop and characterize these levels of DSM savings."[13] As I understand it, the Commission provided this directive so that it could understand the effect that higher levels of DSM could have in mitigating resource costs and thus improving energy affordability for the Company's customers.[14]

IV. DESC'S PROPOSED DSM SCENARIOS

Q: Please explain how the DSM scenarios in the 2023 DESC IRP were developed.

A: DESC retained an independent consultant, ICF, to conduct "[a] bottom-up process…to determine the 15-year maximum achievable energy efficiency

[12] S.C. Code Ann. § 58-37-40(C)(2)(b).
[13] Order No. 2020-832 at 19-20, ¶ 14.
[14] *See id.* at 75 ("[T]he fact that the High DSM case was least-cost for most scenarios modeled should have prompted DESC to *further* evaluate the High DSM case, not to dismiss those results out of hand." (emphasis in original)).

potential forecasts for the 2023–2037 period."[15] ICF followed the common practice of first assessing the "technical potential," or the "the level of energy and demand savings that would result from installing the most technically efficient measures available for each end-use, regardless of cost." [16] It then assessed how much of the technical potential would be cost-effective, conducting "[a]n economic screening process based on the Total Resource Cost (TRC) test…to assess cost-effectiveness and filter out any measures with a TRC below 1."[17] Finally, ICF estimated the "maximum achievable potential" and "achievable potential" based on "ICF program data and expert judgment" and "historical program savings (evaluation) and cost data."[18] Importantly, the resulting scenarios are not factual determinations of what DSM levels are possible. They are the results of analysis and findings that are *highly* dependent on the assumptions they are based on—which is all that a potential study can ever be.

Q: What level of EE does DESC incorporate in its Reference Build Plan—also its "Preferred Plan"—in the IRP?

A: DESC states that "all Core Build Plans are based on the Medium DSM forecast which assumes that DESC can achieve 0.51% energy sales reduction….with the revised measures identified in the 2023 DSM Potential Study."[19] In addition, DESC states that, "[t]o meet Act No. 62 requirements," it modeled two different DSM forecasts as a sensitivity to assess the impact of DSM under otherwise similar

[15] DESC DSM 2023 Potential Study at 5.
[16] *Id.*
[17] *Id.*
[18] *Id.* at 14-15, Table 2: Overview of Study Data Sources.
[19] DESC 2023 IRP at 89.

market scenarios.[20] One sensitivity, the "High DSM Build Plan," assumes DESC can achieve 0.74% energy sales reduction, which the 2023 DSM Potential Study characterizes as the "Maximum Achievable Potential." The second sensitivity, the "Low DSM Build Plan," "assumes that DSM programs are only able to achieve 90% of the Achievable Potential as shown in the 2023 DSM Potential Study," which equals a 0.46% reduction in energy sales.[21] It is important to note that these values are expressed for "gross savings" as a percent of sales excluding opt-outs.[22] This matters because the savings as a percent of sales are even lower when "net savings"—the savings the program can actually claim credit for—are considered. For example, in the Company's Medium DSM case it estimates it would achieve 0.39% net savings (excluding opt-outs)[23] in 2023 rather than the 0.51% gross savings it describes in the IRP.

Q: Please explain your methodology in reviewing the results of the MPS and DESC's DSM forecast in the IRP.

A: In addition to my participation in the EE Advisory Group, I reviewed the IRP narrative describing the DSM scenario development as well as the MPS and accompanying testimony and workbooks. I also developed discovery questions for the Company and ICF to better understand their assumptions and the basis of their findings. I then compared the results of the potential study to the achievements of

[20] *Id.*
[21] *Id.*
[22] DESC 2023 IRP Workpapers, "DESC Potential Study - Achievable Results 2023 05 31" Tab "Energy Savings.Gross" rows 26, 50, and 74.
[23] DESC 2023 IRP Workpapers, "DESC Potential Study - Achievable Results 2023 05 31" Tab "Energy Savings.Net" row 26.

other peer utilities and applied some modified assumptions to the Company's scenarios to develop a much higher, but still realistic, cost-effective, and achievable DSM scenario. Importantly, my purpose is not to redesign the Company's DSM portfolio, but to demonstrate for the Commission that the Company's assumptions are unrealistically low and that it will be in the best interests of customers to require the Company to achieve far greater amounts of cost-effective DSM.

Q: Is the Company's decision to use the Medium DSM Forecast as the basis of its Reference Build Plan defensible?

A: No, it is not. ICF's determination of achievable potential in the MPS is unrealistically low, and I will discuss the reasons I believe this to be the case below. But even assuming ICF's estimates of potential were reasonable, it is not in the customers' best interest for DESC to rely on the Medium DSM case in its Preferred Plan. First, the Company's own potential study shows that there are more achievable cost-effective savings than are reflected in the Medium DSM case; DESC's decision to use the Medium DSM case thus assumes the Company will forgo additional customer savings. Second, the Reference Build Plan incorporating the Medium DSM case costs slightly more than the High DSM Build Plan, indicating that pursuing additional DSM savings would result in lower costs for customers.[24] Yet DESC dismisses the fact that "[t]he High DSM Build Plan is the lowest in LNPV cost of the three DSM Sensitivities" by noting it is "only by 1%."[25] But 1%—$21 million LNPV savings—is not a trivial amount for customers.

[24] DESC 2023 IRP at 89.
[25] *Id.*

Q: Did DESC evaluate the higher EE savings levels required by the Commission's 2020 directive?

A: DESC appears to have nominally complied with the requirement, although the evidence shows that DESC did not take the Commission's directive seriously. Appendix C of the IRP sets out DESC's process and findings for the higher savings scenarios required by the Commission and states "ICF does not believe these scenarios are achievable, but has taken steps to model these theoretical scenarios."[26] This suggests that from the outset ICF and DESC viewed the savings levels in the Commission's order as only a hypothetical exercise. As such, the Company has not made an earnest effort to determine how to achieve higher savings levels.

Indeed, in response to discovery asking "[d]id ICF conduct multiple scenario analyses that would proactively seek to identify and optimize cost-effective pathways to achieve the higher-level savings of 1.25%, 1.5%, 1.75%, and 2% as ordered by the Commission?"[27] the Company responded "[n]o. Given that these scenarios were higher than what was identified as realistically achievable by the 2023 DSM Potential Study, no additional scenario analysis was performed."[28] In reaching this conclusion, ICF and DESC apparently did not consider that many other utility EE programs have achieved these higher levels of savings.

Q: What evidence supports your position that the Company did not take reasonable steps to identify solutions to meet the Commission's required scenarios?

[26] *Id.* at 101, Appendix C: Commission-Required EE Forecast Results.
[27] CCL/SACE Data Request 2-6.
[28] DESC Response to CCL/SACE Data Request 2-6.

A: In ICF's development of the "Commission-Required" DSM Forecasts, it chose an overly simplistic approach that failed to consider higher cost-effective levels of savings. Indeed, the illustration DESC provides of the higher savings scenarios shows that in each of the programs it considered it did not choose the highest level of savings that would still be cost-effective. Consider **Table 2** below, reproduced from DESC's workpapers, which shows the benefit cost (BC) results of the programs at increasing levels of savings. The cost-effectiveness scores simply reflect the Net Present Value (NPV) of the benefits of the DSM programs divided by the NPV of the costs of the programs, based on what ICF assumed would be the benefits and costs at various savings levels.

Table 2: Residential BC Results, DESC Potential Study Commission-Required Forecasts[29]

Program TRC	BAU	1.00%	1.25%	1.50%	1.75%	2.00%
Appliance Recycling	1.03	1.03	0.89	0.80	0.68	0.57
ENERGY STAR Products	n/a	0.87	0.86	0.84	0.82	0.79
Heating, Cooling, and Water Heating	1.04	0.94	0.93	0.93	0.93	0.92
Home Energy Checkup - Tier 1	1.74	1.72	1.22	0.89	0.68	0.52
Home Energy Checkup - Tier 2	0.54	0.43	0.42	0.42	0.41	0.39
Home Energy Report	2.41	2.64	2.21	1.84	1.49	1.08
Multifamily	1.37	1.41	1.26	1.12	0.96	0.81
Neighborhood Energy Efficiency	1.10	1.20	1.17	1.12	1.07	1.00
Online Marketplace	2.46	2.42	2.18	1.92	1.47	1.22
RES Total	***1.14***	***0.89***	***0.84***	***0.80***	***0.76***	***0.71***

Q: What is the difference between the pink highlighted cells and the cells that are not highlighted in Table 2?

A: All the cells that are not highlighted in pink represent cost-effective levels of savings. As you can see, several programs continue to be cost-effective at savings

[29] DESC 2023 IRP Workpapers, DESC Potential Study - Commission-Required Forecasts.xlsx, Tab "RES Scenario Results, rows 19-29. Note that the Business as Usual (BAU) scenario in the MPS is equivalent to the Medium DSM case.

levels that exceed 1%. However, DESC has failed to iterate different combinations of program scenarios to see if it could devise more robust savings results consistent with the Commission's order. In other words, DESC's preconception, rather than the actual evidence, appears to be driving the conclusion that the higher levels of savings in the Commission's 2020 directive are unrealistic.

Q: How much more savings would be achieved if DESC had chosen the highest level of cost-effective savings in each program?

A: The answer varies by program, but as shown in the cells in **Table 2** that are not shaded pink, there are increased levels of cost-effective savings in a number of programs. In aggregate the cost-effective levels of residential program savings are more than two and a half times what DESC has included in its Medium DSM case. This is shown in **Table 3** below. Presumably, DESC dismissed these higher levels of savings out of hand based on its flawed conclusion that they "were higher than what was identified as realistically achievable." [30]

Table 3: Medium Case Savings vs. Cost-effective Residential Savings[31]

Medium Case Total Residential Savings	35,491,873
Cost-Effective Residential Savings	94,887,730
Difference	**59,395,857**

Q: Is there a specific program example that illustrates this?

[30] DESC Response to CCL/SACE Data Request 2-6.

[31] DESC 2023 IRP Workpapers, "DESC Potential Study - Commission-Required Forecasts.xlsx", Tab "RES Scenario Results," rows 7-15. The highest level of cost-effective savings was selected for each program. Where additional cost-effective savings were not shown, the Medium DSM case savings were selected.

A: Yes. Let me use the Home Energy Checkup (HEC) program as a specific example of the savings ICF ignored when assessing DSM potential. I have copied the HEC Tier 1 and Tier 2 rows from **Table 2** above, and reproduced them here as **Table 4**:

Table 4: HEC BC Results, DESC Potential Study Commission-Required Forecasts[32]

Program TRC	BAU	1.00%	1.25%	1.50%	1.75%	2.00%
Home Energy Checkup - Tier 1	1.74	1.72	1.22	0.89	0.68	0.52
Home Energy Checkup - Tier 2	0.54	0.43	0.42	0.42	0.41	0.39

Table 4 shows that the HEC Tier 1 program is cost-effective up to the level of savings ICF included in the Commission-Required 1.25% potential study scenario. In the 1.25% scenario, ICF projects that HEC Tier 1 will achieve 9.3 million kWh savings—more than five times the 1.8 million kWh[33] that DESC included in its preferred Medium DSM case, and ICF shows that those savings are cost-effective.

Q: Are there other flaws in the Company's process for developing the Commission-Required scenarios?

A: Yes. For example, as discussed above, HEC Tier 1 has a cost-effectiveness score of 1.22 at the 1.25% savings scenario level. At that level of savings and using ICF's budget estimate I calculate it will cost the Company $0.79 per first year kWh saved to implement the Tier 1 program, while HEC Tier 2 will cost quite a bit more per kWh saved, as illustrated in **Table 5**:

[32] DESC 2023 IRP Workpapers, "DESC Potential Study - Commission-Required Forecasts.xlsx", Tab "RES Scenario Results, rows 23-24. Note that the Business as Usual (BAU) scenario in the MPS is equivalent to the Medium DSM case.

[33] DESC 2023 IRP Workpapers, DESC Potential Study - Commission-Required Forecasts.xlsx, Tab "RES Scenario Results, row 10. Note that the Business as Usual (BAU) scenario in the MPS is equivalent to the Medium DSM case.

Table 5: HEC Cost per 1st year kWh saved (Tier 1 & 2)[34]

	BAU	1.00%	1.25%
Home Energy Checkup - Tier 1	$ 0.69	$ 0.69	$ 0.79
Home Energy Checkup - Tier 2	$ 1.88	$ 1.88	$ 2.01

However, it is not at all clear why the Company treats HEC Tier 1 and HEC Tier 2 as two distinct programs when they are really two components of the same HEC program. Treating them as a single program could streamline customer participation, increase measure uptake, reduce administrative costs, and lead to greater achievement of cost-effective savings. But instead of focusing on how to maximize overall cost-effective savings, the Company arbitrarily isolates the investments and savings in Tiers 1 and 2. As a result, far fewer of the robust savings measures in Tier 2—measures that would provide significant bill reductions to customers— would be installed.

Q: How much might savings increase if HEC were treated as one program instead of two?

A: Consider that the weighted average cost per kWh saved of the two program elements yields a cost that is in between Tier 1 and Tier 2, as expected, and as illustrated in **Table 6**:

[34] Cost per 1st year kWh saved calculated from Program Total Costs provided in DESC 2023 IRP Workpapers, “DESC Potential Study - Commission-Required Forecasts.xlsx” Tab “RES Scenario Results,” rows 10 and 11 (program savings), 59 and 60 (program costs).

Table 6: HEC Cost per 1st year kWh saved (Tier 1 & 2 Combined)[35]

	BAU	1.00%	1.25%
Home Energy Checkup - Tier 1	$ 0.69	$ 0.69	$ 0.79
Home Energy Checkup - Tier 2	$ 1.88	$ 1.88	$ 2.01
Home Energy Checkup - Tier 1 & 2	$ 0.97	$ 1.41	$ 1.60

The HEC Tier 1 program is, at the costs and savings levels used by ICF, cost-effective up to some point between the 1.25% scenario (BC of 1.22) and the 1.5% scenario (BC of 0.89),[36] suggesting a program cost per first year kWh saved of around $0.75 would be cost-effective. Treating Tier 1 and Tier 2 as a single program, and aiming for a cost of $0.75 per 1st year kWh under the "combined" program, would have a better chance of contributing to the higher savings levels in the Commission's directive. The HEC programs are just one example of how the Company could have been more responsive to the Commission's directive by iterating different combinations of measures to maximize the savings it could achieve rather than arbitrarily limiting the measures in its analysis.

Q: Are the program costs that ICF used in the Commission-Required scenarios in line with what you have seen in other jurisdictions?

A: No. I proposed above that DESC aim for a combined Tier 1 and Tier 2 cost of $0.75 per kWh saved, and I realize this is considerably less than the values shown in **Table 6** above. However, ICF and DESC's estimated costs are unreasonably high and inconsistent with what I have seen in other jurisdictions—even accounting for the fact that program costs for acquiring savings are changing as federal lighting

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[35] The cost per 1st year kWh saved for combined Tier 1 and 2 was derived from the combined data referenced in the prior table.
[36] DESC 2023 IRP Workpapers, "DESC Potential Study - Commission-Required Forecasts.xlsx," Tab "RES Scenario Results, row 23.

standards and updated building codes are implemented. Specifically, I compared ICF's proposed program costs to the data in a project EFG completed for a Virginia client, titled *Pathways for Energy Efficiency in Virginia* (VA Pathways) and attached as **Exhibit JG-2**.[37] In this report, we benchmarked savings acquisition costs and the amount of savings achieved by different program types for twelve investor-owned utilities (IOUs) that achieved savings equal to between 1% and 2% of sales in 2018. EFG carried this project out to demonstrate how Dominion Energy Virginia could comply with its statutory savings targets. The report was completed in 2021 and analyzed reported net savings and program costs from 2018 program reports. Even though there have been changes in the utility EE landscape in the ensuing period, the findings are highly instructive.

Q: In the VA Pathways project, did EFG review costs for home retrofit programs?

A: Yes, in that project EFG obtained program cost data from the 2018 annual reports of twelve utilities with successful EE portfolios. Of these twelve utilities, nine reported data for whole-house retrofit programs. EFG found the average cost per first year kWh saved for these programs that are in the same program category as a *combined* HEC Tier 1 and 2 was \$0.64.[38] Assuming program costs could reasonably be higher today, a 20% increase over this cost, or \$0.77, would put this

[37] Jim Grevatt & Liz Bourguet, Am. Council for an Energy Efficient Econ., *Pathways for Energy Efficiency in Virginia: Scenarios for Virginia Electric and Power Company to Achieve the Virginia Clean Economy Act Energy Efficiency Savings Goals,* (June 2, 2021), https://www.aceee.org/pathways-energy-efficiency-virginia.

[38] VA Pathways Modeling Tool, Pathways-Dominion-VCEA-Savings-Model-6-3-21, tab "Consolidated Costs" row 5, available at https://www.aceee.org/pathways-energy-efficiency-virginia (converted from $ per First Year MWh).

cost in the range of the roughly $0.75 per first year kWh saved that appears to be cost-effective under ICF's modeling of HEC Tier 1. In any event, the VA Pathways data suggests program costs for the combined HEC Tier 1 and 2 program should be far less than $1.41, calculated above in **Table 5** based on the estimates provided by ICF.

Q: Did DESC and ICF similarly fail to iterate options for the Commercial and Industrial Scenarios?

A: Yes, DESC and ICF similarly failed to iterate solutions for a cost-effective Commercial and Industrial (C&I) portfolio to meet the Commission's requirements. ICF's C&I scenario cost-effectiveness results are shown in **Table 7**:

Table 7: C&I Results, DESC Potential Study Commission-Required Forecasts[39]

Program TRC	**BAU**	**1.00%**	**1.25%**	**1.50%**	**1.75%**	**2.00%**
EnergyWise for Your Business	1.35	0.93	0.90	0.87	0.83	0.82
Municipal Lighting	1.36	1.36	1.36	1.36	1.36	1.36
Small Business Energy Solutions	1.48	0.96	0.91	0.87	0.84	0.84
C&I Total	***1.37***	***0.94***	***0.90***	***0.87***	***0.84***	***0.83***

ICF concludes that higher levels of C&I savings would not be cost-effective. But the cost-effectiveness results do not seem to align with the cost ICF assumed it would take to reach higher levels of C&I savings. For example, ICF estimates that the level of savings it included in its 1.25% scenario for the EnergyWise for Your Business program is roughly triple what it included in the Medium DSM case, and that the program costs would be roughly 3.7 times the Medium DSM case costs as shown below in **Table 8**. As the ratio of benefits to costs decreases with increasing

[39] DESC 2023 IRP Workpapers, "DESC Potential Study - Commission-Required Forecasts.xlsx," Tab "C&I Scenario Results," rows 13-17.

costs it would be reasonable to assume that cost-effectiveness would also decrease somewhat, but not to the striking extent suggested by the Company.

Q: Do the cost-effectiveness scores that result in the higher scenarios seem reasonable?

A: At first glance they do not seem unreasonable, but a closer look raises questions. Simply dividing the costs by the savings in each scenario tells us how much ICF determined it would cost per 1st year kWh saved at the different savings levels. For example, if a program costs $500,000 and saves 1,000,000 kWh in the first year it is implemented then the cost per first year kWh saved would be $500,000 ÷ 1,000,000 = $0.50. ICF assumes the cost per unit of savings will increase as higher savings levels are achieved, which result in reduced benefit-cost results as savings increase, which I have shown in **Table 8**:

Table 8: Cost per 1st year kWh saved: EnergyWise for Your Business[40]

	Medium case	1.25%	Change
Total Program Budget	$6,328,387	$23,534,527	372%
Total Savings	22,353,123	67,666,687	303%
$ per 1st year kWh saved	$0.28	$0.35	23%
ICF BC Result	1.35	0.90	-50%

Q: Does it make sense that the cost-effectiveness results are 50% less as a result of the total cost per kWh saved increasing by 23%?

A: No. In response to discovery regarding several of the residential programs where the decrease in cost-effectiveness results was even more pronounced, DESC replied that "[t]he reduction in the cost-effectiveness is driven by an increase in the non-

[40] DESC 2023 IRP Workpapers, DESC Potential Study - Commission-Required Forecasts.xlsx, Tab "C&I Scenario Results, rows 7 and 32.

incentive cost for each program. Savings and incremental cost increased linearly as participation increased."[41] If this response is also true for the EnergyWise for Your Business program, it certainly raises questions about the dramatic change in cost-effectiveness (especially because I included ICF's estimate of non-incentive costs[42] in my calculation of the cost per 1st year kWh saved). All things being equal, I would expect the cost-effectiveness score for EnergyWise to also decrease "linearly," or in proportion to the increase in costs, by about 23%. But the decrease in ICF's analysis is actually twice that amount, suggesting that increased costs are driving down cost-effectiveness at a surprisingly high rate. Because the cost-effectiveness ratio is calculated using the net present value (NPV) of the savings over the full life of the energy efficiency measures it is possible that the measures included in the 1.25% scenario are so significantly different in expected measure lifetimes that it could change the cost-effectiveness result in this way. However, it is not clear why the measures would be so different in the Medium DSM case and 1.25% scenario. If the change to cost-effectiveness was consistent with the cost increase, it would result in a program cost-effectiveness score more like 1.10 than the 0.90 suggested by ICF, which would mean savings at that level would be cost-effective. This result is yet another example of how ICFs assumptions prevented the Company from fulfilling the Commission's directives. Had the EE Advisory Group been provided an opportunity to recommend modifications to the

[41] DESC Response to CCL/SACE Data Request 2-12(a).

[42] "Non-incentive" costs include program administration, marketing, and potentially any other costs related to program implementation that are not direct incentives paid to customers.

Commission-required scenarios before the Company concluded they were unachievable, I would have raised these very concerns.

Q: How do the findings from the VA Pathways compare with what ICF has proposed?

A: There are a couple of comparisons I can provide to illustrate that ICF has been overly conservative in the MPS. One of the first steps we took in the VA Pathways study was to look at the savings as a percentage of sector sales each utility was achieving in each program type. For the C&I Prescriptive program type,[43] the utilities EFG looked at for VA Pathways on average achieved about 0.734% of C&I sector sales in 2018, and for the C&I Custom program type they achieved on average about 0.642% of C&I sales.[44] So, on average the prescriptive and custom C&I programs achieved total savings of 1.34% of sector sales. Comparing this to DESC's 2021 C&I sales net of opt-outs shows that DESC proposes to achieve far, far less than this, as illustrated in **Table 9**. In fact, the VA Pathways data suggest that for DESC to be in line with the VA Pathways utilities it would need to achieve five times what it proposes for C&I savings in the Medium DSM case, or slightly more than it proposes for the EnergyWise for Your Business program in the 2.0% savings scenario—a level ICF says is not cost-effective and not achievable.

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[43] It is common for utility EE program administrators to offer a C&I "Prescriptive" program that provides fixed rebate amount for prescribed measures that are common to many types of customers, as well as "Custom" programs that provide incentives for less common measures that may require unique analysis to determine potential savings and incentives.

[44] VA Pathways Modeling Tool, Pathways-Dominion-VCEA-Savings-Model-6-3-21, tab "Consolidated Savings" rows 12 and 13, available at https://www.aceee.org/pathways-energy-efficiency-virginia.

Table 9: Savings as a % of DESC 2021 C&I Sales[45]

VA Pathways Prescriptive and Custom	1.376%	116,598,863
DESC EnergyWise for your Business Medium case	0.264%	22,353,123

Q: Do the findings of the VA Pathways project suggest that the EnergyWise program costs used by ICF are unreasonable?

A: Yes. Specifically, it suggests that the costs ICF used are overstated. The VA Pathways project found that the cost per 1st year kWh saved was on average about \$0.15 for the prescriptive C&I programs and about \$0.22 for the custom C&I programs, or about \$0.18 on average for the two combined.[46] In contrast, ICF assumed it would cost \$0.28 per kWh at the Medium DSM case level, \$0.35 per kWh at the 1.25% savings level, and \$0.43 at the 2.0% savings level.[47] The cost comparison is provided in **Table 10**:

Table 10: VA Pathways Costs vs. ICF for EnergyWise for Your Business

VA Pathways C&I Prescriptive % of sales	$	0.15
VA Pathways C&I Custom % of sales	$	0.22
VA Pathways Prescriptive and Custom	$	0.18
DESC Medium case savings % of sales	$	0.28
DESC 1.25% savings % of sales	$	0.35
DESC 2.0% savings % of sales	$	0.43

Q: Are there any mitigating factors the Commission should be aware of in making comparisons between the VA Pathways numbers and ICF?

[45] 8,475,428,370 kWh from DESC 2023 IRP Workpapers, DESC Potential Study - Commission-Required Forecasts.xlsx, Tab "C&I Scenario Results, cell C4.

[46] VA Pathways Modeling Tool, Pathways-Dominion-VCEA-Savings-Model-6-3-21, tab "Consolidated Costs" rows 12 and 13, available at https://www.aceee.org/pathways-energy-efficiency-virginia.

[47] Cost per 1st year kWh saved calculated from Program Costs divided by Program Savings provided in DESC 2023 IRP Workpapers, "DESC Potential Study - Commission-Required Forecasts.xlsx" Tab "C&I Scenario Results," row 7 (program savings), 32 (program costs).

A: Definitely. It is reasonable to think that the costs identified in the VA Pathways report may understate what it would take to achieve the same level of savings today. I also believe that savings are somewhat harder to come by as efficient lighting has become more widely adopted. However, the question is how much more will savings cost now, and how much harder will it be to acquire them? ICF suggests that achieving savings for EnergyWise for Your Business at the 2.0% scenario level would cost nearly 2½ times what high achieving utility EE programs actually paid for slightly higher levels of savings in 2018. That is unsupported. ICF also found that these levels of savings are not achievable, yet it has not demonstrated why that would be the case. The Company says "DESC's DSM programs are now in their thirteenth program year, and many of the easy-to-reach customers and readily available savings have been captured."[48] However, the low levels of savings achieved by the Company do not support this claim. Indeed, many, if not all, of the utilities in the VA Pathways comparison had been implementing EE programs for years at the time these data were captured, and thus DESC's argument that all of its low-hanging fruit has already been plucked hardly seems valid.

Q: Are the utilities selected for VA Pathways different from DESC in ways that reduce the value of the comparison?

A: No. The utilities selected for VA Pathways are relatively high-achieving to be sure, but there is no reason that DESC could not dramatically increase its energy efficiency performance to be more in line with its peers. Of course, the

[48] DESC 2023 IRP at 16.

characteristics of all of the service territories of these utilities vary, but the VA Pathways data I referenced are averages. Some of the comparison utilities performed higher or lower than average in different program types depending on the characteristics of their customers. It is also likely that the protocols for determining cost-effectiveness vary in the different jurisdictions, but I have not used those utilities' cost-effectiveness results in my comparison here. Instead, I have merely looked at costs and levels of savings to benchmark ICF and DESC's assumptions and test their determinations on what is "achievable." In that respect, these data offer compelling evidence that the Company has grossly underestimated the amount of energy efficiency it can implement.

V. THE ENERGY EFFICIENCY ADVISORY GROUP PROCESS

Q: What did the Commission require of DESC to ensure a robust EE Advisory Group process for determining achievable levels of DSM?

A: The Commission directed that "DESC include in its 2023 IRP a comprehensive evaluation of the cost-effectiveness and achievability of DSM portfolios reaching 1% and higher savings, including savings levels of 1.25%, 1.5%, 1.75% and 2%, and to *work with the Advisory Group to develop and characterize these levels of DSM savings*." [49]

Q: Did you have concerns with the DESC-facilitated EE Advisory Group process and whether it would achieve the Commission's directive?

[49] Order No. 2020-832 at 19-20, ¶ 14 (emphasis added).

A: Yes. While I appreciated that ICF was initially responsive to certain stakeholder concerns,[50] as the process unfolded, providing input became more time-consuming without engendering any changes to the Company's results. For example, CCL/SACE invested a considerable amount of time in preparing recommendations for revisions to some measure characterizations—key inputs into the MPS. However, DESC's achievable potential estimates remained remarkably low despite these inputs, which should have increased achievable potential. In response to discovery asking about these results, the Company indicated that "[t]hru [sic] the normal activities of developing any potential study, ICF made ongoing changes to the measure input assumptions as necessary. Due to the time constraints of the study, it was not possible to send updates after each iteration of the measure characteristics list."[51] In other words, changes were made to measure characterizations after stakeholders had provided feedback, and without an opportunity for further review. EE Advisory Group participants only found out about these changes when they questioned why the achievable results were so much lower than expected.

Q: Are these unilateral actions by ICF and DESC reflected in the EE Advisory Group's stakeholder materials?

A: Yes. For example, CCL/SACE asked "[w]hy did [duct sealing] measure savings drop from 1087 kWh to 216 kWh?" to which DESC replied "[t]he original savings for this measure were based on EM&V results for PY11. The savings were updated

[50] For example, early in the MPS development process, ICF responded to stakeholder concerns relating to EE load shapes by developing revised end use load shapes for assessing the value of energy efficiency.
[51] DESC Response to CCL/SACE Data Request 2-15(a).

based on EM&V results for PY12, which showed a significant decrease in the savings."[52] But the core issue of whether the PY11 or PY12 EM&V results would be more reflective of *future* savings was not brought to the EE Advisory Group for discussion, nor was it addressed in DESC's response. Rather, it appears that ICF and DESC went ahead and made an unsupported change, and only acknowledged that change once the resulting low savings were questioned. Even DESC acknowledges that "[t]here are multiple factors that are used to determine future savings that are unique to each measure and program."[53] It does not necessarily follow that the most recent evaluation data is always what will be most representative of future savings, yet simply adopting a five-fold reduction in savings for the duct sealing measure based on the most recent EM&V is exactly what DESC did.

Q: Did the Company provide the EE Advisory Group with details of all the measure characterizations that it changed due to EM&V?

A: No. And the Company was also vague in response to discovery asking for those details. CCL/SACE requested the Company "[p]lease provide a list of each measure characterization update that was made based on 'additional EM&V' and indicate the program implementation period that was evaluated."[54] To this request the Company replied "[d]eveloping this comprehensive list is overly burdensome. However, ICF's analysis leveraged the latest available EM&V results to ensure that

[52] DESC EE Advisory Group Materials, DESC Response to Revised Measure Characterizations Dec 9 Comments 12-28-202 at 6, https://www.desc-dsm-stakeholder-group.com/Stakeholder-Materials.
[53] DESC Response to CCL/SACE Data Request 2-15(b).
[54] CCL/SACE Data Request 2-15(a).

measure input assumptions were based on the best available data."[55] It is concerning not only that the Company did not document these changes for the EE Advisory Group's review, but also that they apparently did not keep track of modifications made to key assumptions in the MPS.

Q: **Did DESC engage the EE Advisory Group in a collaborative process to try to develop cost-effective scenarios to meet the Commission's directive to "comprehensively evaluate" savings up to the 2% annual savings level?**

A: It did not. It also failed to respond to the EE Advisory Group on this issue despite numerous requests from EE Advisory Group participants. For example, CCL/SACE wrote to DESC in the EE Advisory Group process:

> [I]n our most recent comments we asked how DESC plans to model th[e higher] savings levels in order to "provide input on that process before it is a fait accompli." DESC responded that "the assumptions used for developing the higher scenarios will be provided *as completed*" (emphasis added). It appears that the overall conduct of the stakeholder process has thus resulted in a situation in which basic assumptions underlying a matter of key importance to stakeholders and the Commission will be provided by DESC only "as completed," which is too late for stakeholders to react to DESC's proposals on this matter. [56]

In response to discovery DESC acknowledged that stakeholders had requested the opportunity to participate in iteration of the Commission-required scenarios, and indicates that it "offered, in the February 16th [2023] Advisory Group meeting, to arrange and hold a special session for ICF to walk-through the details of the development of the High-Case EE Scenarios."[57] However, the IRP

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[55] DESC Response to CCL/SACE Data Request 2-15(a).
[56] DESC EE Advisory Group Materials, "DESC Response to Revised Measure Characterizations Dec 9 Comments 12-28-2022" at 1, https://www.desc-dsm-stakeholder-group.com/Stakeholder-Materials.
[57] DESC Response to CCL/SACE Data Request 2-7(c).

was filed on January 30, 2023, two weeks *before* DESC offered to hold this discussion. DESC only offered to discuss the scenarios after it was moot.

DESC may view its offer to "walk-through"—but not discuss or modify—the scenarios to be collaborative, but I do not. The Company and ICF presented this information to the EE Advisory Group as a completed project without any opportunity to consider alternative solutions. The result, as illustrated by the examples I provided above, is that ICF's assumptions about program costs and achievable levels of savings are flawed, overly conservative, and not responsive to the Commission's directive. Had DESC and ICF incorporated stakeholder feedback, I believe it could have led to a different outcome that would have been more in line with the Commission's directive.

VI. RECOMMENDED MODIFICATIONS TO DSM FORECAST

Q: What level of energy efficiency savings should the Commission require DESC to assume in its IRP?

A: I believe the Commission should require DESC to achieve much higher levels of savings than it has modeled. The savings I recommend the Company achieve through 2037, corresponding with DESC's MPS, are illustrated in **Table 11**.

Table 11: DESC and EFG Proposed Savings Levels (1st Year MWh)

	Medium Case	EFG Additional Savings	Total EFG Savings
2023	66,289	-	66,289
2024	65,934	29,118	95,051
2025	66,926	66,458	133,384
2026	64,270	106,228	170,498
2027	62,869	146,014	208,882
2028	62,203	144,726	206,930
2029	61,981	142,997	204,977
2030	61,908	140,933	202,841
2031	61,743	141,218	202,961
2032	61,577	141,496	203,073
2033	60,888	142,293	203,181
2034	60,740	142,534	203,274
2035	60,673	142,698	203,371
2036	60,583	142,896	203,479
2037	60,191	143,348	203,539

Q: Are the values in the column labeled "EFG Additional Savings" the savings estimates that you provided to Nonprofit Intervenors' Witness Derek Stenclik?

A: Yes. I separated my proposed additional savings by program and applied an estimated useful life (EUL) to the incremental annual savings to develop an estimate of the cumulative persisting savings for each year. I then used the energy savings load profiles that ICF developed for the MPS to develop a savings estimate by program for each of the 8,760 hours in the year. Finally, I aggregated the values of the 8,760 savings into a single consolidated savings profile that I provided to Mr. Stenclik to use in his modeling.

Q: How did you arrive at your recommendation?

A: I reached my recommendation by considering the shortcomings of ICF's analysis of whether Commission-required scenarios were "achievable" and making adjustments that I feel are justified as a result. Specifically, I selected all of the program savings levels from among the various Commission-required scenarios developed by ICF that were cost-effective at the program level with some key exceptions—I selected the HEC Tier 1 and Tier 2 savings from the 1% scenario despite ICF's conclusion that Tier 2 is not cost-effective. This choice is supported for the two reasons discussed in Section II. First, I believe that consolidating the two tiers into a single program would improve overall cost-effectiveness. Second, the dramatically lower costs for a similar program in VA Pathways suggests that ICF's cost assumptions are too high. Home energy retrofit opportunities also provide huge value for participating customers and can reduce energy bills and energy burdens substantially. I also selected the ENERGY STAR products program savings from the 1.25% scenario. The savings levels I selected are illustrated in the highlighted cells in **Figure 1**:

Figure 1: EFG Selected Savings Levels[58]

Program Savings	BAU	1.00%	1.25%	1.50%	1.75%	2.00%
Appliance Recycling	2,565,405	11,017,752	12,772,552	14,244,763	16,953,468	20,700,731
ENERGY STAR Products	-	7,211,008	7,515,942	8,502,389	9,586,355	10,183,713
Heating, Cooling, and Water Heating	5,901,921	12,589,479	13,214,100	13,762,411	14,310,696	16,487,699
Home Energy Checkup - Tier 1	1,794,578	4,605,714	9,260,875	12,419,804	14,433,575	17,093,046
Home Energy Checkup - Tier 2	560,353	7,171,659	18,091,373	26,839,013	32,415,506	37,083,754
Home Energy Report	18,159,240	24,576,556	25,155,088	27,026,614	29,083,158	30,462,511
Multifamily	1,184,722	5,693,968	6,249,807	7,370,243	8,744,098	10,622,348
Neighborhood Energy Efficiency	3,935,076	6,363,448	7,168,940	8,343,037	9,575,594	11,320,248
Online Marketplace	1,390,579	4,169,515	5,229,581	6,774,750	10,535,314	12,877,992
EnergyWise for Your Business	22,353,123	54,247,923	67,666,687	80,759,462	94,128,449	106,562,754
Municipal Lighting	1,321,143	1,321,143	1,321,143	1,321,143	1,321,143	1,321,143
Small Business Energy Solutions	7,399,218	28,929,464	36,855,822	44,865,950	53,441,931	61,451,723

Q: Are you proposing that DESC adopt the precise program level savings that you used to develop your recommendation?

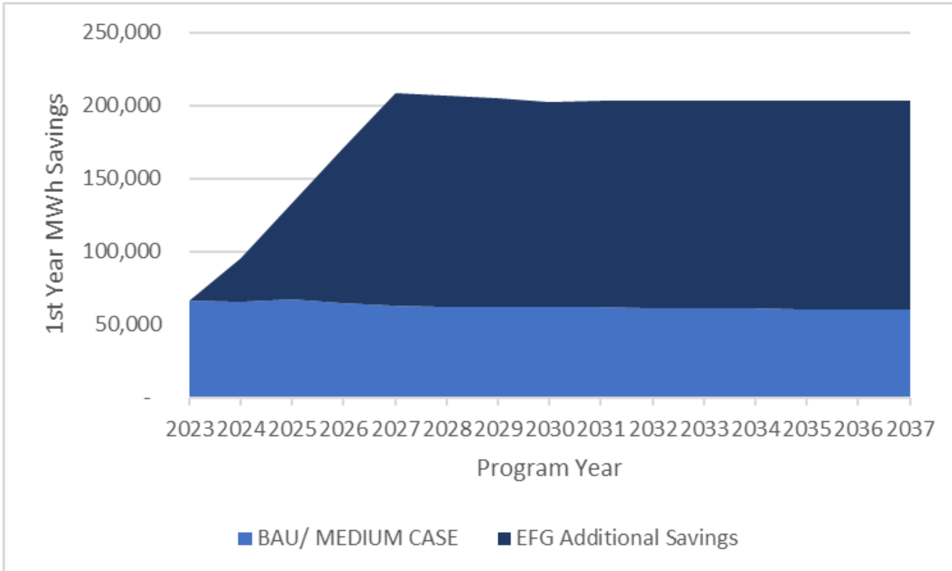
A: Not specifically. I selected program level savings that DESC found to be cost-effective and used them to build up a recommendation for total portfolio savings. However, I recognize that the development of program plans to achieve the recommended level of portfolio savings will likely result in some changes to program-level savings.

Q: Do you assume that DESC can achieve this level of savings in the first year of program implementation?

A: No. I ramped up the program savings over three years beginning in 2024 to achieve these higher savings level in 2027. This is illustrated in **Figure 2**:

[58] Table data are reproduced from DESC 2023 IRP Workpapers, DESC Potential Study - Commission-Required Forecasts.xlsx, Tab "RES Scenario Results," rows 6-15 and "C&I Scenario Results," rows 7-9, shading added.

Figure 2: Medium Case and EFG Proposed First Year Savings



Q: How did you develop cost estimates for the ramped-up programs?

A: I developed budgets based on ICF's proposed cost per first year kWh saved at the relevant savings level. As noted earlier, I believe ICF over-estimated some program costs, so the cost estimates and budgets I used in my estimate are conservative. Specifically, ICF assumed that "[s]avings and incremental cost increased linearly as participation increased"[59] and that "[t]he reduction in the cost-effectiveness is driven by an increase in the non-incentive cost for each program."[60] However, I do not agree with ICF's assumption that increased savings *always* leads to increased non-incentive costs on a unit basis, as economies of scale can lead to stable or even decreased non-incentive costs. This is likely part of the reason that the high-performing utilities identified in the VA Pathways report have been able to achieve savings at lower costs than ICF assumes are needed by DESC. Nevertheless, to be

[59] DESC Response to CCL/SACE Data Request 2-12(a).
[60] *Id.*

conservative, I used ICF's cost estimates in developing my budgets and applied the $ per kWh saved from **Table 12** to the increased savings I proposed above DESC's Medium DSM scenario.

Table 12: EFG proposed $ per 1st Year kWh Saved[61]

Program	$/first year kWh	Source
Appliance Recycling	$ 0.44	DESC 1% Scenario
ENERGY STAR Products	$ 0.56	DESC 1.25% Scenario
Heating, Cooling, and Water Heating	$ 0.83	DESC 1.5% Scenario
Home Energy Checkup - Tier 1	$ 0.69	DESC 1% Scenario
Home Energy Checkup - Tier 2	$ 1.88	DESC 1% Scenario
Home Energy Report	$ 0.20	DESC 2% Scenario
Multifamily	$ 0.81	DESC 1.5% Scenario
Neighborhood Energy Efficiency	$ 0.54	DESC 1.75% Scenario
Online Marketplace	$ 0.78	DESC 2% Scenario
Energy Wise for Your Business	$ 0.35	DESC 1.25% Scenario
Small Business Energy Solutions	$ 0.67	DESC 1.25% Scenario
Municipal Lighting	$ 0.52	DESC BAU Scenario

Q: What are the total annual budgets you calculate to achieve your level of recommended savings?

A: The total portfolio costs I developed using ICF's cost per kWh saved assumptions are shown in **Table 13**. Because my purpose in developing them was to provide Nonprofit Intervenors' witness Mr. Stenclik of Telos Energy with conservative values for modeling I simply used the cost assumptions the Company itself proposed. As Mr. Stenclik confirmed, even with these conservative cost assumptions the higher EE savings contributed to an enhanced reliability portfolio at a slightly lower cost than the Company's Preferred Portfolio. The

[61] $ per 1st year kWh saved calculated by EFG from DESC 2023 IRP Workpapers, DESC Potential Study - Commission-Required Forecasts.xlsx, Tab "RES Scenario Results, rows 7-15 and 56-64; and "C&I Scenario Results, rows 7-9 and 32-34.

outcome would be even more favorable if more realistic EE program costs were developed.

Table 13: EFG EE Program Budgets[62]

Program Year	Total Costs DESC Medium case	EFG Total Additional Portfolio Budget	Total Budget EFG Scenario + Medium case
2023	$ 25,237	$ -	$ 25,237
2024	$ 24,610	$ 14,465	$ 39,076
2025	$ 24,222	$ 37,692	$ 61,914
2026	$ 23,011	$ 61,760	$ 84,771
2027	$ 22,459	$ 85,837	$ 108,296
2028	$ 22,132	$ 85,439	$ 107,571
2029	$ 22,072	$ 84,707	$ 106,779
2030	$ 22,042	$ 83,861	$ 105,903
2031	$ 21,972	$ 84,044	$ 106,017
2032	$ 21,906	$ 84,221	$ 106,127
2033	$ 21,421	$ 84,718	$ 106,139
2034	$ 21,359	$ 84,878	$ 106,238
2035	$ 21,324	$ 85,011	$ 106,335
2036	$ 21,264	$ 85,175	$ 106,438
2037	$ 21,115	$ 85,412	$ 106,527

Q: What level of savings as a percent of sales are you recommending DESC achieve?

A: My recommended savings would lead DESC to achieve just under 1.0% savings as a percent of total sales, or just under 1.25% as a percent of sales net of opt-outs, in 2027 when programs are fully ramped up. This is illustrated in **Table 14**:

[62] DESC Medium case budgets from DESC 2023 IRP Workpapers, DESC Potential Study - Achievable Results 2023 05 31, tab "Portfolio Summary," row 15.

Table 14: EFG Proposed Net Savings as a % of Sales[63]

	Portfolio Total Savings	***% of 2021 Sales***	***% of 2021 Sales (Excl Opt-Out)***
2023	***66,289***	***0.31%***	***0.39%***
2024	***95,051***	***0.44%***	***0.57%***
2025	***133,384***	***0.62%***	***0.79%***
2026	***170,498***	***0.79%***	***1.01%***
2027	***208,882***	***0.97%***	***1.24%***
2028	***206,930***	***0.96%***	***1.23%***
2029	***204,977***	***0.95%***	***1.22%***
2030	***202,841***	***0.94%***	***1.21%***
2031	***202,961***	***0.94%***	***1.21%***
2032	***203,073***	***0.94%***	***1.21%***
2033	***203,181***	***0.94%***	***1.21%***
2034	***203,274***	***0.94%***	***1.21%***
2035	***203,371***	***0.94%***	***1.21%***
2036	***203,479***	***0.94%***	***1.21%***
2037	***203,539***	***0.94%***	***1.21%***

Q: Why should the Commission conclude that this level of savings is achievable?

A: DESC and ICF's analysis itself reveals that much higher levels of savings are cost-effective than DESC proposes to pursue, even with its unreasonably high cost assumptions. That the Company identified cost-effective higher levels of savings for a variety of programs in and of itself suggests that they are achievable and DESC should be making all efforts to achieve them.[64]

The Commission should also consider that my recommendation remains at the *low end* of the average portfolio savings that have actually been achieved by the

[63] Savings as a percent of sales excluding opt-outs calculated by EFG using 2021 DESC sales from DESC 2023 IRP Workpapers, "DESC Potential Study - Commission-Required Forecasts" tab "RES Scenario Results cell C4, and tab "C&I Scenario Results" tab C4. Sales including opt-outs was calculated from DESC's savings and percentages from DESC 2023 IRP Workpapers, "DESC Potential Study - Achievable Results 2023 05 31" tab "Energy Savings.Gross."

[64] In developing the higher savings scenarios, the Company increased program non-incentive costs to reflect the greater challenge it perceives to achieving more savings. It is not clear why they would propose those costs if they do not feel they are sufficient to achieve the higher levels of savings.

twelve leading utilities identified in the VA Pathways project, one of which is Duke Energy Carolinas. This comparison is provided in **Table 15** below:

Table 15: NET Savings as a % of Total Sales, 2018[65]

	% Savings
Entergy Arkansas	1.08%
MidAmerican Energy	1.27%
Xcel Minnesota	1.73%
Baltimore Gas and Electric	1.96%
Consumers Energy	1.55%
Ameren Missouri	1.03%
Commonwealth Edison	2.08%
DTE Electric	1.50%
Duke Energy Carolinas	1.01%
AEP Ohio	1.00%
Duke Energy Ohio	1.32%
Ohio Edison	1.12%
DESC (SCE&G) 2018	0.25%
DESC Medium Case (net) 2027	0.29%

Thus, the level of cost-effective savings that has been identified, and the actual achievements of DESC's peer utilities, are highly relevant in determining whether my recommendation is "achievable." This context also helps to illustrate just how unreasonable and artificially constrained the models in ICF's analysis are. Indeed, in response to discovery, the Company indicated that "of the 28 utilities used to develop participation and cost estimates for the Commission-required forecasts, 12 achieved over 1.00%, 7 achieved at least 1.25%, 5 achieved at least 1.50%, and 3 achieved at least 1.75%."[66]

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[65] Grace Relf, *et al.*, Am. Council for an Energy Efficient Econ, *2020 Utility Energy Efficiency Scorecard*, Report U2004 (February 2020) at 26 (Table 8: Scores for net savings as a percentage of retail sales in 2018), https://www.aceee.org/sites/default/files/pdfs/u2004%20rev_0.pdf. "DESC Medium Case (net) 2027" from DESC 2023 IRP Workpapers, "DESC Potential Study - Achievable Results 2023 05 31" Tab "Energy Savings.Net" row 25.

[66] DESC Response to CCL/SACE Data Request 2-4(a).

Q: Did the Company account for possible influence of the Inflation Reduction Act (IRA) in its estimate of achievable potential?

A: No. The Company states:

> While the Inflation Reduction Act (IRA) will lead to changes in some aspects of utility economics, it would not be pertinent to attempt to alter the results of this potential study based on speculation about those potential changes. As a practical matter, there is no industry standard percentage or consensus on how to apply any proposed IRA funding to a potential study that would fit the DESC requirements to meet compliance of Commission Order No. 2021-295. To comply with this Order, DESC informed the Commission they would ensure that any new measure and/or program and related forecasts are supported by evaluated data or heavily supported by program experience in a similar service territory. While DESC may be able to take certain aspects of the IRA into account in its IRP, such as the potential for increased uptake in EVs as a result of IRA incentives, it is not practicable or appropriate to make similar assumptions as to the influence of DSM programs on the uptake of the measures contemplated in this potential study.[67]

Effectively, the Company seems to be saying that because it does not know precisely how to measure the effect the IRA will have, it will simply assume that it will have no effect whatsoever.

Q: Was the IRA discussed in the EE Advisory Group?

A: Yes. At the November 18, 2022 meeting, as reflected in the meeting minutes, the Company stated that the "IRA's impact on the results would be very difficult to model in a potential study…[however it] continues to see opportunity in having stakeholder sessions to discuss how to take the IRA into account during the 5-year program planning session." [68] Thus, the Company acknowledged there could be a

[67] DESC 2023 DSM Potential Study at 18.

[68] DESC EE Advisory Group Materials, EEAG PY12 Meeting Minutes – Session V" at 8, https://www.desc-dsm-stakeholder-group.com/Meeting-Presentation-and-Materials.

role in incorporating the IRA rebates and tax credits into programs, but declined to consider that program savings potential would increase as a result.

Q: Do you agree with the Company's approach with respect to the IRA?

A: I do not. In my view, the unprecedented IRA rebates and tax credits can provide significant financial support for EE improvements for the Company's customers—support that ICF and DESC did not consider in developing estimates of achievable potential. It is unreasonable to assume, for example, that a $1200 tax credit for weatherization efficiency improvements, a $2000 tax credit for a high efficiency heat pump for households earning more than 150% of Area Median Income, or a rebate of 50% of weatherization project cost up to $1600 for a household between 80% and 150% of AMI[69] will have absolutely no effect on customer participation. However, that is precisely what ICF assumed in the MPS.

The upcoming availability of IRA rebates and tax credits is yet another reason why the Commission should expect DESC to achieve higher levels of savings than what it has proposed, and to further conclude that my recommended savings levels are "achievable."

Q: Is DESC's historical program performance a valid comparison upon which to base estimates of future potential?

A: No. DESC's historical program performance is primarily useful as an indicator of how much improvement might be possible. Consider that ACEEE published a research project comparing the effectiveness of and commitment to EE programs

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[69] *See, e.g.*, How much money can you get with the Inflation Reduction Act? https://www.rewiringamerica.org/app/ira-calculator (last visited June 27, 2023).

among the 52 largest investor-owned utilities in the United States and ranked DESC 44th out of the 52 utilities.[70] In terms of quantitative EE savings and spending performance, DESC received only 2 of a possible 26 points.[71] In light of this standardized ranking, relying on DESC's historical program performance as an indicator of achievable savings potential runs the risk of imposing a logically circular, self-reinforcing limitation on program performance. In fact, this Commission has, in the context of the Duke IRP—a utility that has achieved much higher savings than DESC—explicitly rejected the use of historical savings levels to determine achievable potential.[72]

Q: Why else should the Commission be skeptical of the results of the MPS?

A: As I have demonstrated, there are significant flaws in ICF's analysis, yet ICF persists in its position that "the results of the MPS reflect the reality that a 1% reduction in sales is not achievable."[73] DESC Witness Drew Durkee indicates that this position "is based on the results of the analysis that took place as described in the DESC DSM Potential Study report."[74] Remarkably, however, Mr. Durkee was unable to answer in discovery whether "any of the utilities for which he has participated in development of potential studies ever achieved savings that exceeded what was considered "realistic" or "achievable" in the study."[75] To

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[70] Relf, *supra* note 65, at vii–ix (Table ES 1. Summary of Scores). At the time of this report, DESC was still "SCE&G."

[71] *Id.* at viii, 5. To assess EE program performance, ACEEE considers net incremental energy savings achieved, level of program investment, peak demand reduction, net lifetime energy savings, achievement of savings target, and participation of customers in home retrofit programs.

[72] Order No. 2021-447 at 33 ("The Commission is persuaded by Witness Grevatt's testimony that the Company should model EE/DSM savings beyond the levels that have historically been achieved.")

[73] Direct Testimony of Andrew M. Durkee at 27, Docket No. 2023-9-E (Apr. 4, 2023).

[74] DESC Response to CCL/SACE Data Request 2-13(a).

[75] DESC Response to CCL/SACE Data Request 2-13(b).

CCL/SACE's inquiry, he replied "[i]t is not common practice to compare potential study results with actual implementation results."[76]

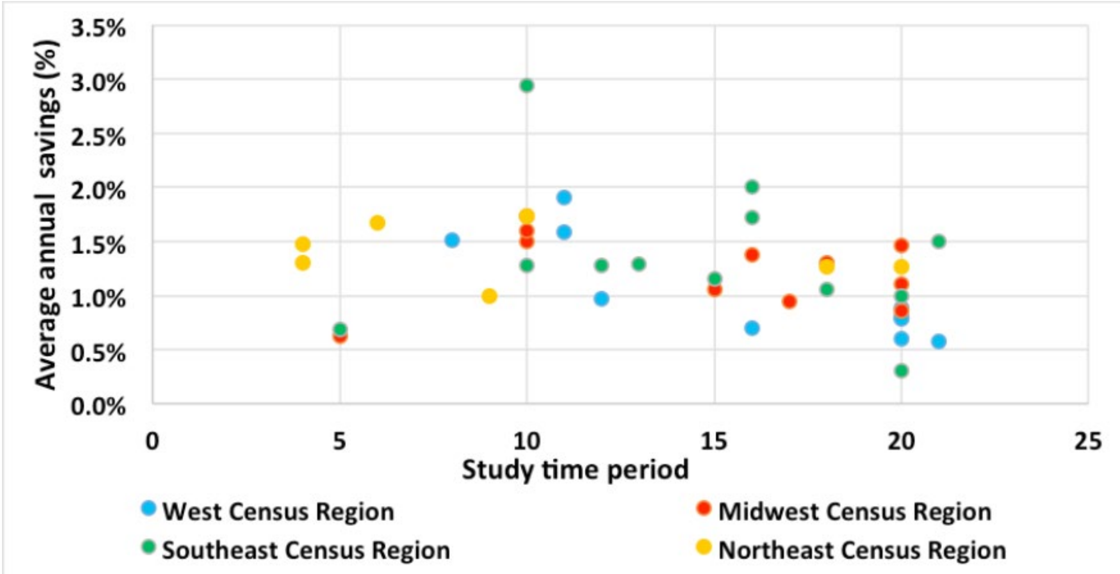
Q: Are there unique characteristics of DESC and its service territory that explain why it should be so limited in its ability to achieve savings?

A: While every jurisdiction has its own unique attributes, this concept that DESC, or Southeast utilities generally, are uniquely unable to deliver a high level of energy savings is not supported by an ACEEE analysis of 45 potential studies. ACEEE found, by analyzing "the relationship between savings and study time period, savings and census region (to assess possible geographical differences), savings and participation rates, and savings and avoided costs…[that] it does not appear that savings vary by geography: there was equal representation across the country for a given level of savings."[77] This is illustrated in **Figure 3** below:

[76] *Id.*

[77] Max Neubauer, Am. Council for an Energy Efficient Econ., *Cracking the TEAPOT: Technical, Economic, and Achievable Energy Efficiency Potential Studies*, Report U1407 (2014) at v, https://www.aceee.org/research-report/u1407.

Figure 3: Average annual electricity savings (%), by census region[78]



Q: Are you able to provide an example of a utility EE program that exceeded what was considered achievable?

A: Yes. Consider the example of Public Service Company of Colorado (PSCo) which has a strong history of EE programs. PSCo achieved 1.45% savings as a percent of sales in 2018,[79] and hired Navigant to conduct a potential study that estimated achievable potential to be 410 GWh in 2019 and 405 in 2020. Yet the Public Utility Commission of Colorado established a higher savings goal of 500 GWh for PSCo. As a result, the utility ultimately achieved savings significantly greater than what the study said was achievable, as shown in **Table 16**:[80]

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[78] *Id.* at 30 (Figure 4: Average annual electricity savings (%) by census region).

[79] Relf, *supra* note 65, at 26 (Table 8. Scores for net savings as a percentage of retail sales in 2018, showing 1.45% savings for PSCo subsidiary Xcel CO).

[80] Colorado differs in many respects from South Carolina, however these differing factors are reflected in the potential study analysis conducted in each state. This example is not intended to demonstrate the specific level of savings achieved in Colorado – rather it is to show that its potential study, while indicating an aggressive level of savings, still underestimated what the utility would ultimately achieve.

Table 16: PSCo Achievable and Reported Savings[81]

Year	Reference Case Achievable Potential	PSCo Proposed Savings	Commission Ordered Annual savings	Reported Annual Savings
2019	410	350	500	504
2020	405	350	500	466

The fact is that potential studies are tools used to create estimates and are not capable of determining <u>actual</u> limits to what is achievable. This limitation of potential studies is well-documented. ACEEE, the Regulatory Assistance Project, Lawrence-Berkeley National Laboratory, and others have all studied how well potential study estimates correlate with future results.[82] ACEEE, for example, reviewed "45 publicly available studies published since 2009" with the intent to "better understand the nuts and bolts of these studies and how their various

[81]"Reference Case Achievable Potential" and "PSCo Proposed Savings" savings from Direct Testimony of Shawn M. White at 28 (Table SMW-D-1), 46 (Table SMW-D-4), https://www.dora.state.co.us/pls/efi/efi.show_document?p_dms_document_id=867958&p_session_id=. "Commission Ordered Annual savings" from Public Utilities Commission of the State of Colorado Decision No. C18-0417 at 21-22, Proceeding No. 17A-0462EG (April 11, 2018), https://www.dora.state.co.us/pls/efi/efi_p2_v2_demo.show_document?p_dms_document_id=887182/. "Reported Annual Savings" from 2019 Reported savings from Public Service Company of Colorado 2019 Demand-Side Management Annual Status Report at 6, Proceeding No. 18A-0606EG, https://www.dora.state.co.us/pls/efi/efi.show_document?p_dms_document_id=922869&p_session_id=, and 2020 Reported savings from Public Service Company of Colorado 2020 Demand-Side Management Annual Status Report at 7, Proceeding No. 18A-0606EG, https://www.dora.state.co.us/pls/efi/efi.show_document?p_dms_document_id=943309&p_session_id=. Note that 2020 savings were below forecast due to COVID-19 but were still significantly more than the potential study achievable potential. PSCo's approved plan in Proceeding No. 20A-0287EG calls for 538 GWh savings in 2021 and 523 GWh in 2022. Final 2021/2022 Demand Side Management Plan at 6, https://www.dora.state.co.us/pls/efi/efi.show_document?p_dms_document_id=942211&p_session_id=.

[82] *See, e.g.*, David B. Goldstein, *Extreme Efficiency: How Far Can We Go If We Really Need to?,* ACEEE Summer Study on Energy Efficiency in Buildings (2008), Vol. 10 at 44-56, https://www.aceee.org/files/proceedings/2008/data/papers/10_435.pdf; Philip Mosenthal, *Do Potential Studies Accurately Forecast What is Possible in the Future? Are We Mislabeling and Misusing Them?,* Presentation for ACEEE Energy Efficiency as a Resource Conference (Sept. 21, 2015), https://www.aceee.org/sites/default/files/pdf/conferences/eer/2015/Philip_Mosenthal_Session2D_EER15_9.21.15.pdf; and Chris Kramer & Glenn Reed, Regulatory Assistance Project, *Ten Pitfalls of Potential Studies* (2012), https://www.raponline.org/wp-content/uploads/2016/05/energyfutures-kramerreed-tenpitfallsesdraft2-2012-oct-24.pdf.

methodological approaches and assumptions influence energy efficiency potential estimates."[83] The report concludes, among other things, that

> given the inaccuracy of models and the generally conservative approach of these studies, there is likely a great deal of additional cost-effective potential available beyond what is identified…. Moreover, given the fact that most studies base their customer-participation models on economics, even short-term forecasts of market dynamics are murky. This is because studies tend to downplay the impact of program design elements such as marketing and education, as well as the non-energy justifications for investing in energy efficiency.[84]

Q: Did ICF's MPS address program design elements?

A: No. In response to discovery from CCL/SACE, the Company clearly states that "ICF did not make specific assumptions about these elements as this is out of scope for a potential study analysis."[85] I agree with ACEEE that, regardless of whether ICF thinks program design elements are in or out of scope, ignoring them leads to underestimation of potential savings. Specifically, for a utility such as DESC, whose EE program performance has consistently been ranked near the bottom nationally, it is common sense to expect that enhanced attention to program design would improve performance and thus achievable savings.

Q: Would it be reasonable to expect the firm the Company selected to conduct the MPS to be aware of the studies you reference?

A: Certainly, especially given that determination of the achievable level of savings in the MPS primarily relied on "ICF program data and expert judgment" and

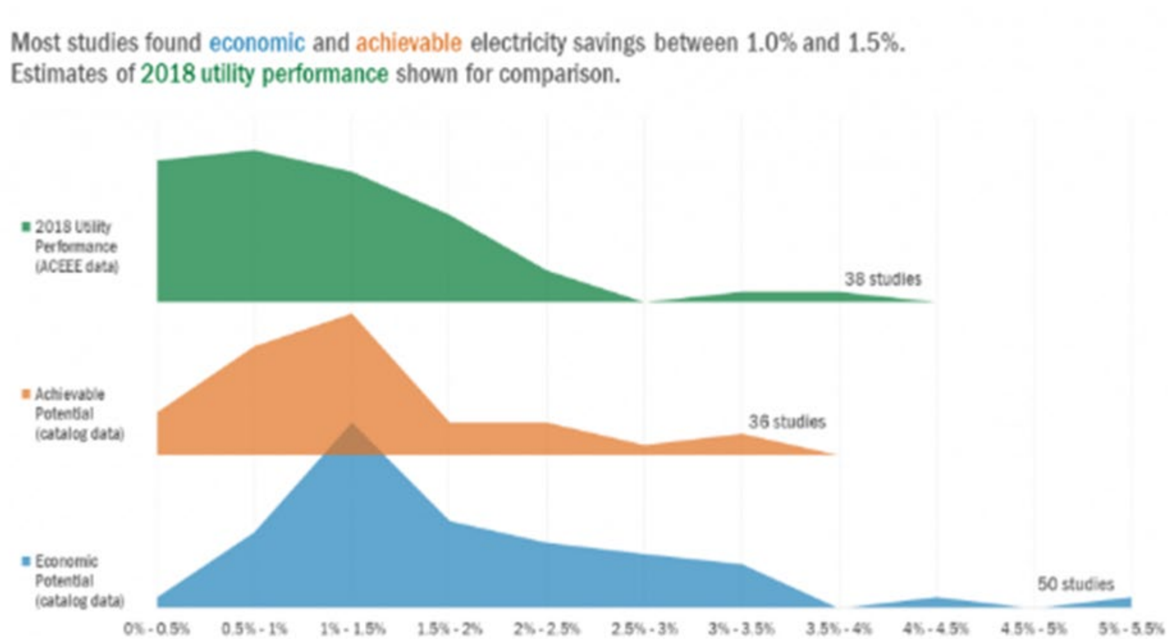
[83] Neubauer, *supra* note 77, at iv.
[84] *Id*. at 39.
[85] DESC Response to CCL/SACE Data Request 2-3.b.

"[h]istorical program savings (evaluation) and cost data."[86] Yet DESC responded to discovery that "[t]he only comparison of potential study results with actual implementation results that Mr. Durkee is aware of is for the DESC 2019 Potential Study in which DESC's actual achievements have been lower than the achievable scenario."[87]

Q: Are you aware of other entities that have compared achievable potential with actual program results?

A: Yes. In fact, the U.S. federal government posted an Energy Efficiency Potential Studies Catalog that shows actual performance exceeds potential studies, as reflected in the diagram I have reproduced here as **Figure 4**:

Figure 4: Comparison of "Achievable" and Reported EE Savings



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[86] DESC 2023 DSM Potential Study at 15.

[87] DESC Response to CCL/SACE Data Request 4-9.a.

The text accompanying the diagram states that "[t]he top chart in the…figure shows that many utilities have achieved robust savings, *in some cases outperforming the identified achievable potential and suggesting the potential for even greater savings*."[88]

VII. MANAGING PERCEIVED RISKS OF HIGHER DSM

Q: What steps might DESC take to address the potential risk of not being able to acquire the recommended savings?

A: If it does not do so already, the Company should adopt a project management approach,[89] which I consider a fundamental step of successful program implementation. In fact, the Virginia State Corporation Commission directed Dominion Energy Virginia to include in future DSM filings "a detailed project management plan and risk management strategy demonstrating that the Company has identified and planned for deployment of the resources required to implemented its revised Programs."[90] The Commission could similarly require DESC to document the specific, detailed action items the Company will take in its project management plan for reaching higher levels of savings. Presumably, project management expertise already exists in the Company for completing supply-side infrastructure upgrades.

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[88] U.S. Dept. of Energy, *Energy Efficiency Potential Studies Catalog*, https://www.energy.gov/scep/slsc/energy-efficiency-potential-studies-catalog#catalog (last visited July 27, 2023) (emphasis added).

[89] Project management is a well-studied and documented process for ensuring that teams are able to complete complex "projects" on time and on budget. For one example of a resource explaining the basics of project management, *see* Adrienne Watt, Project Management (2nd ed.) (Aug. 14, 2014), available at https://opentextbc.ca/projectmanagement/.

[90] Va. State Corp. Comm'n, Case No. PUR-2020-00274, Petition of Virginia Electric and Power Company for approval of its 2020 DSM Update pursuant to § 56-585.1 A 5 of the Code of Virginia, Final Order at 10 (Sept. 7, 2021).

Q: Are there resources available to utility EE program managers that DESC could avail itself of?

A: Yes, as noted previously, DESC could consider procuring additional expert support for its portfolio design and implementation. Guidehouse, a firm with considerable program design and evaluation experience, is already under contract with DESC to facilitate the EE Advisory Group. DESC should explore expanding their scope of work to include this support and should also look to other firms to better understand the opportunity industry experts might provide. I also recommend DESC join the Consortium for Energy Efficiency (CEE) as a utility member. CEE is a non-profit organization whose website states:

> CEE is an EPA Climate Protection Award-winning consortium of efficiency program administrators from the United States and Canada. Members work to unify program approaches across jurisdictions to increase the success of efficiency in markets. By joining forces at CEE, individual electric and gas efficiency programs are able to partner not only with each other, but also with other industries, trade associations, and government agencies. Working together, administrators leverage the effect of their ratepayer funding, exchange information on successful practices, and, by doing so, achieve greater energy efficiency for the public good.[91]

When I implemented EE programs at Vermont Gas and Efficiency Vermont, I found CEE to be an invaluable resource. I reviewed the current member list on its website and found that Dominion Energy Utah is listed on the CEE website as a member utility, but not DESC.

[91] Consortium for Energy Efficiency, *Frequently Asked Questions*, https://cee1.org/content/frequently-asked-questions#aboutcee (last visited July 27, 2023).

VIII. DEMAND RESPONSE IN THE IRP

Q: Has DESC included Demand Response programs in the 2023 IRP?

A: DESC indicates that it "modeled two DR programs, Residential ToU and Smart Thermostat Opt-In, in the 2023 IRP."[92] These two programs are additional to the interruptible and backup generation DR programs that DESC currently offers its C&I customers. The two residential DR programs would be new offerings "for DESC to consider once the full installation of AMI is completed within the DESC service territory."[93]

Q: Have you conducted an analysis of DESC's proposed DR programs?

A: While I have reviewed the MPS and the narrative information on DR provided in the IRP, I have not conducted additional analysis on the DR programs. It is positive that DESC has included such programs in the IRP modeling, but given they are completely new for DESC I believe it is better to allow the Company to focus on initial implementation of the residential DR programs while it concurrently expands its EE programs. I support the development of these programs and look forward to encouraging their maximum deployment in the future as the Company gets them off the ground.

IX. RECOMMENDATIONS

Q: Please summarize your recommendations to the Commission.

A: I recommend the Commission:

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[92] DESC 2023 IRP at 17.
[93] DESC 2023 DSM Potential Study at 5.

1. Require DESC to develop and submit to the Commission a five-year EE portfolio plan that reflects the higher levels of savings I describe in my testimony. Specifically, DESC should provide a plan that achieves the annual incremental energy efficiency savings shown in **Table 17**:

Table 17: EFG Proposed Annual EE Savings Targets

	Portfolio Total Savings	***% of 2021 Sales***	***% of 2021 Sales (Excl Opt-Out)***
2023	***66,289***	***0.31%***	***0.39%***
2024	***95,051***	***0.44%***	***0.57%***
2025	***133,384***	***0.62%***	***0.79%***
2026	***170,498***	***0.79%***	***1.01%***
2027	***208,882***	***0.97%***	***1.24%***

2. Require DESC to include in its five-year EE plan the rollout of residential DR programs at no less than the level included in the 2023 IRP.
3. Require the Company to develop and implement an action plan to support all of its customers by participating in the opportunities created by the IRA, such as by helping customers to understand which measures qualify for IRA rebates and tax credits and how they can find a contractor and comply with application criteria.
4. Require DESC to incorporate additional EE into its modeling consistent with my recommendations and as discussed further in the testimony of Nonprofit Intervenors Witness Derek Stenclik.

Q: Does this conclude your testimony?

A: Yes.

CERTIFICATE OF SERVICE

On behalf of the South Carolina Coastal Conservation League, Southern Alliance for Clean Energy, and Sierra Club, I hereby certify that the *Direct Testimony and Exhibits of Jim Grevatt* have been served upon the parties listed below via first class U.S. Mail or electronic mail.

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This 27th day of June, 2023.
s/Kate Lee Mixson